

Running Head: Open Educational Resources

OPEN EDUCATIONAL RESOURCES:

Leveraging the opportunity of laptops for open education in Maine

Amity Beane

University of Maine, Farmington

April 20, 2011

ABSTRACT

The Maine laptop initiative provides learners with the hardware and software needed to access OER (open educational resources). To meet learning standards teachers must identify and share these resources in an organized way. A group of educators from k-12 schools identified existing open educational resources that meet curricular goals. For OER to grow in Maine schools, professional development, sustainability, funding, copyright, and quality control need to be considered.

OPEN EDUCATIONAL RESOURCES:

Leveraging the opportunity of laptops for open education in Maine

Introduction

What if every citizen of the world with access to a computer and a network could receive a quality education for free? The movement to open education to all is spearheaded by the creation and use of open educational resources (OERs). The term was first used at a UNESCO conference in 2002. The complete definition states that OERs are “digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research.” (Hylén, p. 30, 2006). The concept is timely in education, with the right to education acknowledged as a global human right by the United Nations in 1948 as a part of the Universal Declaration of Human Rights (see Appendix A). The trend to develop, organize, and share open educational resources in order to fulfill this right and enlighten the populace and therefore alleviate human suffering is worthy of research.

The positive implications of the open educational movement in Maine school systems begin with the wide array of free materials that open educational resources represent. Teachers in underfunded districts can use OERs immediately in the classroom and receive professional development as a result of OERs designed for them. With training and shared knowledge of how open education works, there is the potential for reduced costs for textbooks, increased knowledge of standards-based curriculum design, and creative integration of technology, pedagogy, content, and knowledge (Koehler & Mishra, 2008). Dynamic collegial growth is just one

possible outcome. In addition, when OERs are identified, they can provide educators with an immediate toolkit to augment the laptop initiative beyond word processing and searches. According to the Maine Learning Technology Initiative's (MLTI) official site (2010), 100% of Maine public middle schools are currently with a 1 pupil to one computer ratio, or 1 : 1. 55% of Maine public high schools participate in the laptop initiative. A lease on 100,00 machines occurred in 2009, and as of 2010, 64,000 computers had been ordered and given to students (Maine Learning Technology Initiative, 2010). Those numbers suggest that digital resources are at a maximum leverage point for learners. Open educational resources should flourish in such an environment.

Synthesis

The literature was chosen for this review to provide a definition of open educational resources and a historical context for the OER movement. Some of the studies were case studies involving integration of OER into k-12 schools or universities. In addition, barriers and limitations to OER were addressed. There is exploration of what is needed to support the OER movement in education including funding, sustainability, quality control, copyright, and professional development surrounding frameworks for identifying and using open educational resources.

No clear path

As a whole, the studies focused on what OER can do to leverage a learning community and the basic human right to be educated. Most researchers agreed that open educational resources are, as Koehler and Mishra (2008) defined on page 10, a

“wicked problem”, first defined by Rittel and Webber in 1973 as types of problems that have incomplete, contradictory, and changing requirements. To expand on why this definition helps to frame open educational resources: There is no governing OER board, or any one organization that represents the OER movement. There are issues with creation, identification, and alignment to various standards. There is clear evidence that open educational resources are not free, and teachers do not magically know what to do with them: they must be introduced to the type of open educational resources (OER), of which there exist multiple types. Simply put, there is no easy way to go about adopting an open educational movement in a school system. There are no clear solutions to the issues of copyright, quality control, or basic organization and structure of repositories. The work of OER implementation is not easy, cheap, free, or rapid. However, the results of solving the problem of implementing open educational resources are seen as having great social benefit.

Teacher training

Almost every study concluded that teachers need more professional development in order to fully harness the power of open educational resources. Understanding what they are, how to design and create them, how to use and manipulate them, and how to identify already-existing OERs falls squarely on the shoulders of educators and not technology specialists or administrators, because they are not the ones who will use them in daily practice. If anything, the role of technology specialists and administrators is to allow time for teachers to explore

OERs and integrate them, as well as time to share the process with others. An underlying trust that the teacher is using the resource appropriately aligned to state standards is also necessary. Not having teacher buy-in was shown as a limitation for OERs, as the case study by Schuwer and Mulder (2009), done on open education in the Netherlands, reveals: “Some schools hesitated to cooperate in this experiment because of the busy agendas of the staff with no room for new activities” (p. 70). Any time a district adopts a new initiative, it is implied that the stakeholders will receive training and support.

Identification of resources

Four of the studies were direct initiatives to create and integrate open educational resources. The study by Thrakrar, Zinn, and Wolfenden (2009) focused on a consortium, with funding by the Hewlett Foundation, that developed a bank of open educational resources for teacher education in Sub-Saharan Africa. With an estimation of 4 million teachers needed by 2015 (as cited on p. 2), the concept of OERs was determined to meet a need for school-based teacher professional development. The research was conducted by examining the different types of OERs that were available and grouping them as “highly structured, loosely structured, and guided use” (p. 4). The research addressed teacher interaction with the OERs and the impact on practice. According to the authors (Thrakrar, Zinn, and Wolfenden, 2009), 200,000 teachers are expected to engage with the OER training as of 2009. The limitation revealed by the study is not unusual for the circumstances. They noted: “Teacher motivation, aspiration, and morale are

important contextual factors”—in this case the conditions for teachers including emergency, crisis, and post-conflict situations (p. 2).

Identifying users, and dealing with content

Conditions in the Netherlands were the basis for the study done by Schruwer & Mulder (2009). In this study, data was examined from surveys given to 2000 users of an open educational system. The motivation for such a system was to attract life-long learners and those who were not on traditional pathways. One of the outcomes was a clear framework for developing open educational resources, by means of converting distance learning courses into more open courseware. This framework revealed that intellectual property, or copyright, is a major challenge of developing OERs and subsequently, a copyright “expert” was determined necessary to validate the resource as open. The results of the experiment showed almost a million unique hits to the site, after launching in 2006, with 90,000 returning to use the resources.

One of the major influences that the copyright dilemma had on the initial experiment (which started with three courses and has now grown to 24 offered openly) was that from that point forward, open courses had to be under a Creative Commons™ copyright (see Appendix B). This type of copyright appeared in three of the studies and appeared as a standard in the open educational resource movement, as noted in the research done by Lane (2009), Caswell, Henson, Jensen, and Wiley (2008), and Hylén (2006).

The Dutch experiment by Schruwer and Mulder was a positive one and as a result, the awareness of open educational resources and their potential for Dutch people to access education non-traditionally seems to relate to what open educational resources can do for Maine people. The idea presented to create an “OER expert scenario” (p. 76) in which Dutch educators position themselves as educational experts and market themselves to the secondary schools in the Netherlands could benefit Maine teachers who adopt that strategy. Maine educators could position themselves as experts and with the networks and hardware already in place, lead other states by sharing how to use open educational resources in one to one environments. In addition, the Dutch model of converting all educational components in the public school system to open components which can be accessed by anyone seems like a viable strategy for education for all, especially in a state like Maine, where isolation sometimes prevents learners from achieving higher levels of education.

Creating an open educational resource network

Another positive outcome examined by Petrides and Jimes (2008) was the process of a group of volunteers in South Africa who produced a free, online science textbook for high school students in the country. A clear framework for creating an open educational resource that is unrestricted was given. The idea that the process of creating these texts is an ongoing, fluid process reminds me of Koehler and Mishra’s wicked problem again, and the authors found that sustainability is a key issue with the project. The research was conducted via phone interview with three

founders and one face-to-face interview. This type of narrative seemed appropriate as research because of the unique perspectives of the insiders on the project. One of the strongest outcomes was determining the importance of standards-aligned, peer-produced content (Petrides and Jimes, 2008). In addition, the authors found that the project members were willing to “continually reassess its practices and processes” (p.5) thereby addressing the need to create a dynamic solution for the user. In addition, content management systems were developed and implemented with templates that enabled volunteers to contribute to the textbooks in a usable way. The templates were designed for users to submit, share, and revise text, activities and illustrations in personal workspaces. Teachers did not have to worry about designing the workspace, but were free to focus on the content and standards alignment.

Quality control makes an appearance in the study. How did the project maintain quality control? Petrides and Jimes (2008) found that two full rounds of editing and revising by South African science teachers were required for the content to pass into open status. This type of rigor attributed to the creation of open educational resources should also apply to reviewing already existing digital resources. Simply looking up a science website online and using it to teach a lesson is not the point of an open educational resource. It should align with content standards.

In Wilson’s (2008) study, open educational resources are considered for two vastly different countries in the form of OpenLearn, a content management system

developed by the Hewlett Foundation to adapt distance-learning modules to open courses. Schools in the United Kingdom are compared to schools in South Africa, via interviews with senior professors of those schools about OER initiatives. With this study, the moral imperative for teachers to openly share knowledge was the underlying purpose for developing the initiative. The study revealed that open educational resources are not free, nor are they easy, to produce (Wilson, 2008). In addition, the researchers concluded that set-up, continued support, storage, and keeping the content updated was not cheap. The study was done in the early stages of the OpenLearn content development and was part of a larger study involving 12 representatives from 11 institutions. Without much information on the launch and usage of the OERs at the two schools, it seemed that much more data was needed to see the implications of the project, including whether or not learners really used the open educational resources at their disposal, and whether or not teachers were given support and training for an OER movement.

Designing OERs

Designing open educational resources was mentioned in at least three of the studies. Caswell, Henson, Jensen, and Wiley (2008) defined something called OpenCourseWare as “a digital collection of freely available educational materials organized as courses” (p. 3). The study shared data from the many schools and universities that employ OpenCourseWare as OERs. It also suggests that schools that want to offer OpenCourseWare can often integrate it into existing systems. Marketing was mentioned in terms of sharing OERs as a positive, humanitarian ideal

that is attractive to those paying tuition. Copyright was discussed as being a challenge. Sustainability and funding were also noted as issues for schools considering an OER move. On page 9 the authors revealed that the Hewlett Foundation has donated over 40 million dollars to the development of OERs.

Conole and Weber (2008) focused their research on the need of a “learning design tool” for open educational resources (p. 2). They claimed that the lack of uptake for the OER concept (a concept that is designed for social benefit) is due in part to a lack of design skills by teachers. The authors used 44 case studies to make their arguments. The tool that they proposed was called a “Learning Design Toolbox” (p.2) in which a wide range of tools and resources are collated to provide support and guidance for designers and teachers. It could be replaced by cloud computing services such as Google, which is technically a learning implementation tool. In other words a savvy teacher does not need the learning tool the authors propose, but a series of tools that are already available for free. Professional development is needed in either scenario. What is essential in both scenarios is a formalized learning design methodology, perhaps similar to what the South African textbook research revealed—a template for the flow of creation and implementation of open educational resources that are aligned to standards. Conole and Weber (2008) suggested on page 12 that a formal methodology might “enable better creation and reuse” of OERs.

Creative materials were the subject of the study done by Teczi, Karaca, and Sezginsoy (2008). Their study is a little outside the realm of open educational

resources but relates to the design of OERs, something that has been established as important to the mission. The authors created a scale based on the responses of 112 specialists of material development and creativity—professors of technology development, i.e., content for the masses. The results were organized into a checklist encompassing audio-visual items, content, language and expression, operating and mechanism, form, and color. Developers are able to use this checklist when creating content. This seems valuable to open educational development and is included for that reason.

Dealing with “non-educational” resources

Fulantelli, Gentile, and Taibi (2009) provided a reality to the open educational movement that seems unavoidable. The amount of content that is open and available does not always refer to a specific educational context or “the didactic process” (p. 2), essentially meaning open educational resources are not found in educational realms, or designed by teachers, or exist as a result of educational research. Some open educational resources are websites that exist apart from education, but can be identified as a learning object. This is why it is important, for the Maine study, to align open educational resources to the Maine Learning Results. This particular study again referred to the design of a learning management system by presenting a model of what an open educational movement needs in essence. It dealt with the same issues as other studies: the need to clarify copyright and the need for quality control. The study concluded that open educational resources are “evolving resources and not final products” (p. 9) which reminded me of Koehler

and Mishra's wicked problem referred to in the introduction. One very intriguing idea proposed in the study is the inclusion of students in the design process.

Caswell, Henson, and Jensen (2009) and Lane (2009) dealt with similar themes of content identification outside a clear educational realm online, or learning management systems that organize content with educational design, copyright issues, sustainability issues, and barriers beyond open education. This last theme seems timely for Maine students who have been exposed to technology via the Maine Laptop Initiative. The accessibility gap is narrowing as more and more students and teachers connect.

Summary

The themes in the literature included the need for professional development in the design and management of open educational resources. The right to education for all also implies that teachers need professional learning time to prepare for education for all. Teachers also need to be trained to evaluate copyright and quality control, especially in the beginning stages of designing an open educational component for a set group of learners. Content management systems assist teachers in working with OERs as both designers and curators. If open educational resources are to impact Maine education over the long term, all of these factors need to be addressed by a core group of dedicated people, including administrators, technology support staff (both hardware and software), teachers, and educational technicians.

Conclusion

An initial study of open educational resources for Maine education could introduce the concept to key stakeholders, the teachers. Potential OERs could be put through a rigorous review process, which would define the type of OER, align the OER to standards, identify the target grade to use the OER, and even include which level of Bloom's taxonomy is being used when engaged with the OER. These resources, free, open, shareable, could become the basis for a Maine OER teaching and learning community. What if all the teachers in Maine understood the potential of open educational resources and began to design, create, and share learning objects that benefited everybody? Maine is a state of isolated communities with shrinking populations. It seems imperative to consider the open educational movement as a positive educational trend, with the benefits far outweighing the challenges of implementation.

Why does it matter to continue this research that has stretched across the globe and permeates some of the nation's finest institutes of higher learning? Beyond the moral imperative, open educational resources could reduce marginalization by market forces of learning experiences (think outdated textbooks that have cost a significant percentage of dwindling educational budgets), engage educators in more powerful research, impact generations of learners, including perhaps those who have taken an alternate learning path. Maine educators are in a unique position to leverage the OER movement by partnering with the laptop initiative that has put computers and networks into schools across the state. As in the study by Schruwer and Mulder (2009), teachers could position themselves as experts in accessing knowledge. Teachers are able to connect with each other and

with learners, reducing the inequities inherent to poor, isolated districts. The problem in Maine is learning how to use the hardware and networks to maximum learning opportunities (no more outdated textbooks). The purpose of a Maine OER study would be to create a core community that promotes open, quality education for all that is aligned to state standards, identifies open copyright sources, and trains teachers how to integrate these sources. How can educators partner together to identify open educational resources, as well as implement the professional development required for open education to work? As the studies showed, there are many elements needed for success, none more essential than willing participants to do the work required of initiating, developing, and sustaining learning content that is appropriate to the time and space of learners.

Methods

There are many teachers and students in Maine equipped with hardware (computers) and networks (broadband internet access). The purpose of the study was for teachers to identify open educational resources that can be utilized to fit the curricular needs of Maine learners with laptops. A team of educators in each content area examined web resources in a double-review process. The review process focused on adherence to learning standards, copyright, and accessibility.

Site

The data for this study came from a team of Maine World Language teachers representing the nine Superintendent's Regions, geographically isolated but connected on-line. The research was initially organized by the Syntiro™ agency

(formerly known as the Maine Support Network) in Readfield, who hired the team members from various recommendations of superintendents and curriculum coordinators as well as grant administrators. The study was funded by a federal Recovery grant. From that initial process of fielding names from practitioners in the field, a team leader was hired based on an application and interview. The team leader and principal investigator for World Languages organized the remaining work in an on-line format, reported to Syntiro™ and collaborated with other content area team leaders throughout the study. The Syntiro™ meetings were done using Adobe Connect™ and were facilitated by Syntiro™. The online work for the World Language cohort was organized initially using a Ning, but then was changed to Google applications for reliability and sharing capabilities. Skype™ was used for conference calls using the computer. Up to 9 people met using Skype™ over the course of the project, making it a valuable resource for the study.

Subjects

The purpose of the study was to identify open educational resources currently on-line as existing websites. The goal was to identify at least 50 websites that qualified as open through a teacher rating and peer review. Each content area leader under the grant was allowed to decide how to begin the work. In the World Languages cohort, the team leader decided to create a Google form (see Appendix C) asking team members to identify their “top ten” websites that they were using with success in their practice. The list was examined to look for double or triple entries to avoid duplication. The candidate list, generated from a Google form, became a

spreadsheet that was shared on Google™ with the team. The research team was divided into small groups to do reviews and peer reviews of the candidates. The team leaders, in multiple planning meetings, generated the Google™ form used to rate the candidates. The content team leaders revised the form early in the research period to include what levels of Bloom's taxonomy the candidates were utilizing and how each met the Creative Commons copyright definition, if applicable.

Instrumentation

The candidates were rated using two reviews. These were called the candidate review and the peer review (see Appendix D and Appendix E) . The candidate review was used to rate the website according to a set of criteria. The peer review was used to crosscheck this rating. Both the candidate and peer review were differentiated between the content areas. In team leader meetings, the different standards such as Common Core versus Maine Learning Results were discussed and different Google™ forms were created to meet the needs of each content area. The candidate reviews, both initial and peer review, were set up as on-line surveys that teacher researchers completed while concurrently reviewing a website. The surveys, created on Google™ forms, generated spreadsheets that were shared easily between researchers in an online format.

The candidate review

The candidate review consisted of 19 required fields (see Table 1) used to rate the website. These fields were specific to the content area. A URL is included in this report to the original Google™ form (see Appendix D).

Table 1 Questions used in the candidate review

**FIELDS IN CANDIDATE REVIEW FOR POTENTIAL
WORLD LANGUAGE OERS**

1. Website
2. URL
3. Language
4. Grade Cluster
5. Terms of Use
6. Type of OER
7. MLR Standard Descriptor
8. Other Comments
9. Accuracy
10. Credibility
11. Accessibility
12. Does this copyright meet our definition of Open?
13. Pedagogy
14. Pedagogy Description
15. Completeness
16. Reuse
17. Revise
18. Copyright Category
19. Bloom's Taxonomy

The peer review

The peer review was shorter and meant to clarify the data. (See Table 2). A URL is included in this report to the original Google™ form (see Appendix E).

Table 2 Questions used in the peer review

**FIELDS IN PEER REVIEW FOR POTENTIAL WORLD
LANGUAGE OERS**

1. Name
2. OER Title
3. OER Title
4. OER URL
5. Rate the extent to which you feel this OER aligns to the identified standard(s).
6. Does the copyright of this OER meet our definition?
7. Rate the quality this OER Type.
8. Rate the credibility of this OER.
9. Rate the accessibility of this OER.
10. Rate the teaching strategy associated with this OER.
11. Rating of OER credibility.
12. Rate of the ease with which this OER can be reused.
13. Rate the ease with which this OER can be revised.
14. Other
15. I recommend this OER for selection.
16. Overall Comments related to this OER
17. Suggested Tags for this OER

Each researcher was expected to rate ten websites. Before formally doing the rating of each site, to improve reliability and validity, each researcher did one review. Then the team met online to discuss how the candidate rating form was designed and how their responses were formed. This feedback was used to give a final edit to the candidate rating form and to come to a consensus about how to answer the questions and what exactly the questions were designed to reveal. With this revised vision of research and understanding, the team began the study and began to independently review each website identified in the initial survey (See Appendix C).

Procedure

Once the instruments were deemed valid and reliable, the World Language research cohort was broken into three small groups and a three-month calendar was created. This was during the summer so teachers, in general, had more time to devote to the research. The calendar allowed for each group to meet with the team leader and principal investigator three times in three months. Within each group, each individual was responsible for reviewing the candidates that were identified during the initial survey (see Appendix D) using the candidate review form (see Appendix E). The goal was to identify at least fifty high quality open educational resources in World Languages. The team sought resources that provided opportunities for teachers and learners to address each of the Maine Learning Results through:

1. vocabulary and grammar practice in writing, reading, speaking and listening activities,
2. authentic language experiences including collaboration between teachers, learners, and native speakers
3. exposure to native speakers and culture
4. technology sites that would assist in world language teaching.

Each small group met three times with the team lead. At each meeting, information about other content areas was shared, sites were shared, and questions were asked to clarify research. The team leader and principal investigator reported these meetings to Syntiro™ and clarified research expectations between Syntiro™ and the team. At the conclusion of this three-month period of independent research and small group discussion about the research, peer reviews were assigned to the research cohort as a whole.

As the peer reviews began, a system was devised to code the candidates. The spreadsheets were color-coded for quick reference: green meant the site was a high quality OER, yellow meant there were still questions, and red meant that the site did not qualify as an OER.

Once the candidates went through the first review, they were examined for patterns and to see what were the gaps, shortcomings, and strengths of the research so far (see Appendix F). After the peer review was over, the team created two narratives. The first narrative was a list of the high quality open education resources that had been identified through a double review process (see Appendix G). The second narrative was an individual account of a “most valuable” open educational resource and how to use it in teaching (see Appendix H). Both of these

narratives became valuable documents to share with Maine teachers after the research cycle was complete.

Data analysis

The data organization was taken from the candidate review form. Each survey question was summarized in *Google™* docs to visualize what was collected. The sites that met all the criteria of an open educational resource are tagged in Delicious™ under the Syntiro™ username (Appendix I). In addition, the sites that met all the criteria and passed the peer review were organized into a Master List that is being shared with teachers at various conferences and online (see Appendix G).

Concurrent with this study done by World Language teachers were similar studies in other content areas including Math, Career, Health, and the Arts. The results can be found on the Syntiro™ Delicious™ site (Appendix I).

Limitations

The main delimitation, to ensure that quality open educational resources could be identified for immediate use, was to review current websites as opposed to create new sites to meet the needs of learners. Second, the languages of study were French, Spanish, and German. Teachers were also used in the study as opposed to curriculum coordinators or technology integrators. The study was limited in that the sites chosen for review came out of the experience of only nine teachers in the state of Maine. While all are World Language teachers, a greater number of teachers

providing baseline data would garner different results. An additional delimitation was to ignore grade spans of the reviewed sites as World Language teachers are certified k-12.

In the future, several studies could be done over time to close gaps and more teachers could provide a greater number of identified open educational resources. This particular study is currently in Phase 2, with requirements under the grant to share professionally and identify 50 more open educational resources. The researchers are currently investigating pursuing another OER project funded by Hewlett Packard that is designed to create rubrics for identifying OERs. The concept of identifying and sharing sites can be replicated any number of times and can provide greater and deeper knowledge about teaching with open educational resources.

Results

How can educators partner together to identify open educational resources, as well as implement the professional development required for open education to work? More specifically, what open educational resources exist that provide opportunities for World Language teachers and learners in the following areas:

1. vocabulary and grammar practice in writing, reading, speaking and listening activities,
2. authentic language experiences including collaboration between teachers, learners, and native speakers
3. exposure to native speakers and culture
4. technology sites that would assist in world language teaching?

As a result of the study, 58 open educational resources were identified and curated on a website for World Language teachers and learners in Maine.

Partnering together

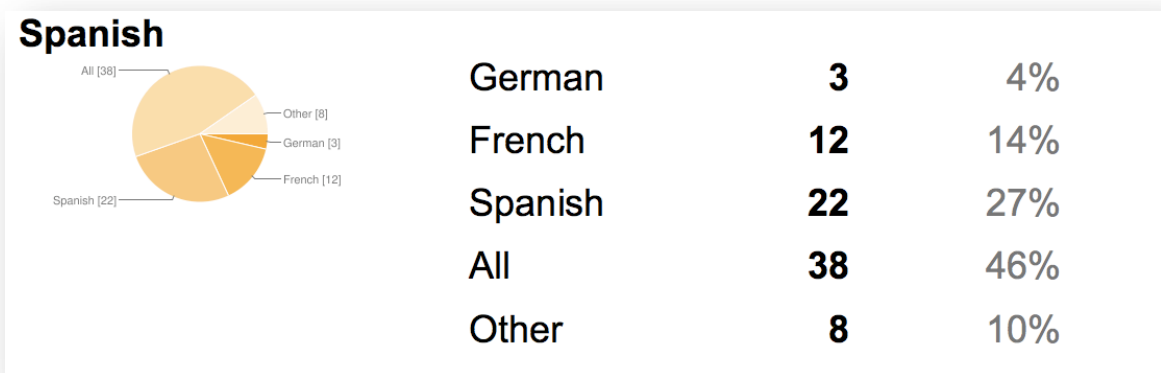
The study itself was done in a virtual environment, utilizing various platforms (Ning™, Adobe™, Google™) to connect teacher collaborators in remote locations. The team leaders were chosen for their level of comfort conducting on-line meetings as well as ability to organize on-line data. Nine researchers connected over a series of 24 meetings that netted 57 open educational resources. It required a timeline and a reliable computer with Internet connectivity. In spite of technical difficulties at times, one researcher responded in the reflective phase of the study: “I have absolutely loved participating in the OER project. I feel this project has been a very valuable effort, as it has allowed the researchers to locate and evaluate web resources for teachers of world languages. Aside from the websites that I found and reviewed, I learned how to use Google™ Docs, Ning, and other technologies that were required to complete my work on the project. The time invested was well worth the outcome.” (See Appendix J.)

Another researcher said: “The process of compiling a master list of stellar OERs for use by other World Languages Teachers has been somewhat daunting, but very exciting. The idea of having numerous professionals working together from varied geographic regions with varying perspectives and experiences is great. The most difficult parts of this process included: muddling through the format and processes for finding and reporting; determining what constituted a true OER;

determining how each OER fit into each of the categories required by leadership; and having to wait for the organization to decide the how and the what of the process. In spite of these roadblocks, the result will most definitely be worth the time and effort expended. The resources this will afford Maine teachers are invaluable. In working through this process I learned more about the practical application of many technologies. They included: broader ability to use Google™™ forms and docs, and introduction to Skype™ and Google™ chat.” For a complete list of researcher comments, see Appendix J.

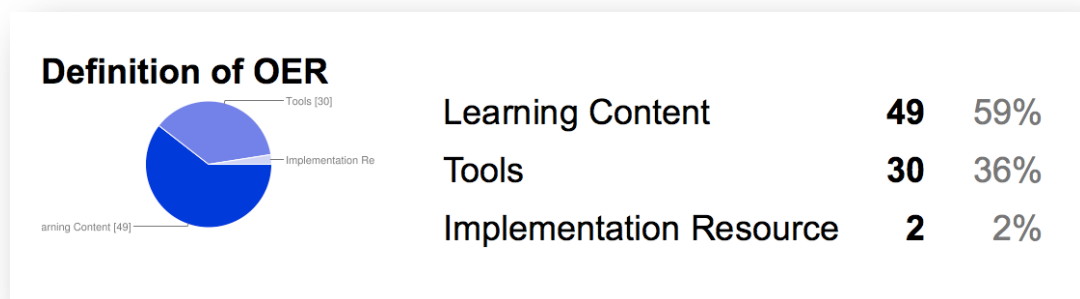
Seeing results

The purpose of the study was to identify open educational resources in World Languages by rating 83 websites. The candidate review form, made with Google™, organized the data into a spreadsheet. Once every researcher had rated their sites, the data was arranged to show the patterns. Overall, sites that pertained to *All* the languages of the study ranked the highest followed by *Spanish* resources, and then *French*. Two thirds of the researchers were teaching Spanish at the time of the study. Table 3 shows the breakdown of language of study represented by the 83 sites.

Table 3 List of languages represented in the OER study

What kind of resource?

The second identified pattern was that learning *Learning Content* was the most prevalent type of OER identified (see Table 4.) .

Table 4 Type of OER identified in the study

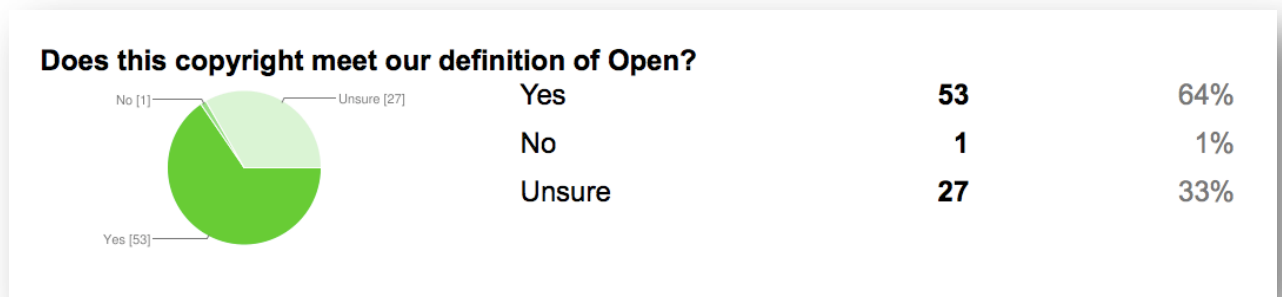
The fourth question, to identify technology sites that assist in language learning, is represented by the *Tools*. 36% percent of the sites rated were identified

as Tools. These included on-line dictionaries, word references, conjugation practice, and grammar practice.

Copyright

After identifying which languages were represented and what type of resource, the question on Copyright showed that it was not always clear if these sites were open according to the definition of open educational resources (OERs), which is: "digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research." Hylen, 2007). Researchers who encountered vague or unclear copyright designations were instructed to locate the site creator and ask for specific copyright information. This happened on 33% of the reviews (see Table 5).

Table 5 Copyright identification within the study



The Creative Commons™ license was cited as “Unsure” in 27 out of the 83 sites reviewed. This was also identified in the Schruwer and Mulder (2009) study as being an issue.

Revise and reuse

Tables 6 and 7 show the *Revise* and *Reuse* ratings for the websites in the study. Among the sites, 77% were rated as “technically easy to manipulate” for the teachers, a term, which had been clarified in the discussion phase of the study to mean even technology-illiterate teachers could access information. Also noted: 68% were found to be “easy to integrate into other materials.”, which had been clarified to mean supportive of a lesson. *Reuse* ratings showed a high percentage of the sites were “visually engaging”, “clean, user-friendly” and “can be used as-is”, all terms meaning the site was accessible to non-technology natives.

Table 6 Revisability rating of the websites

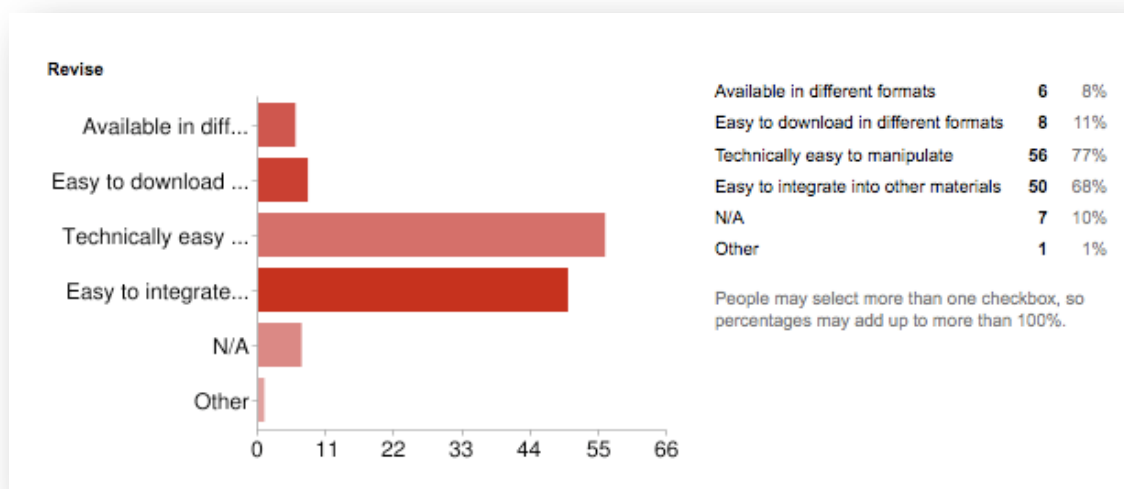
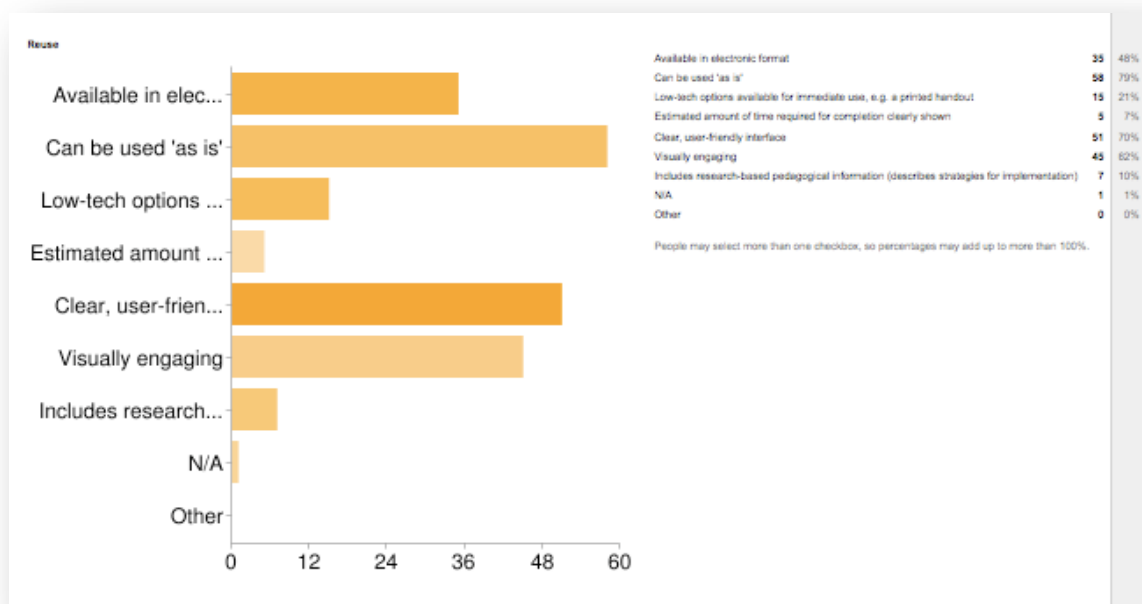
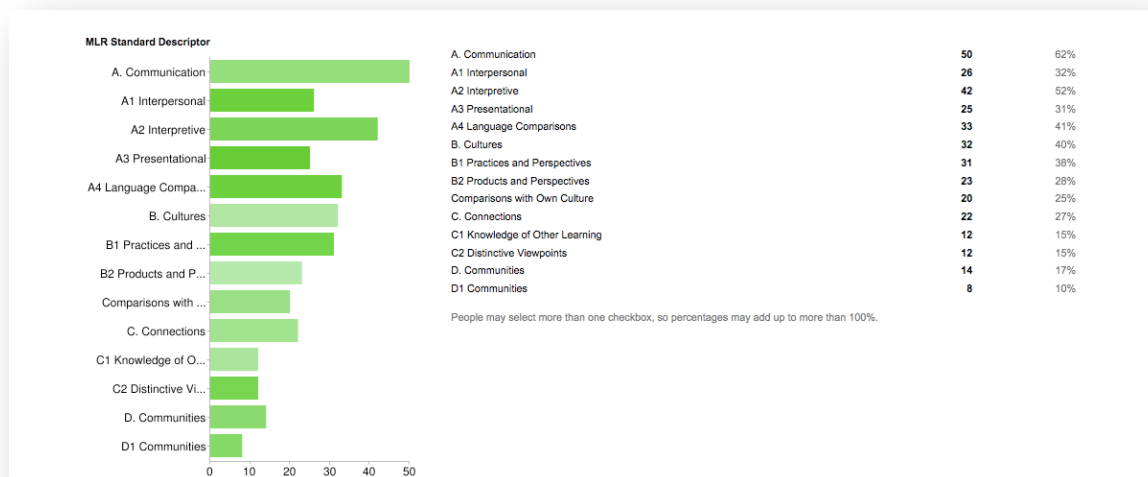


Table 7 Reuse rating of the sites

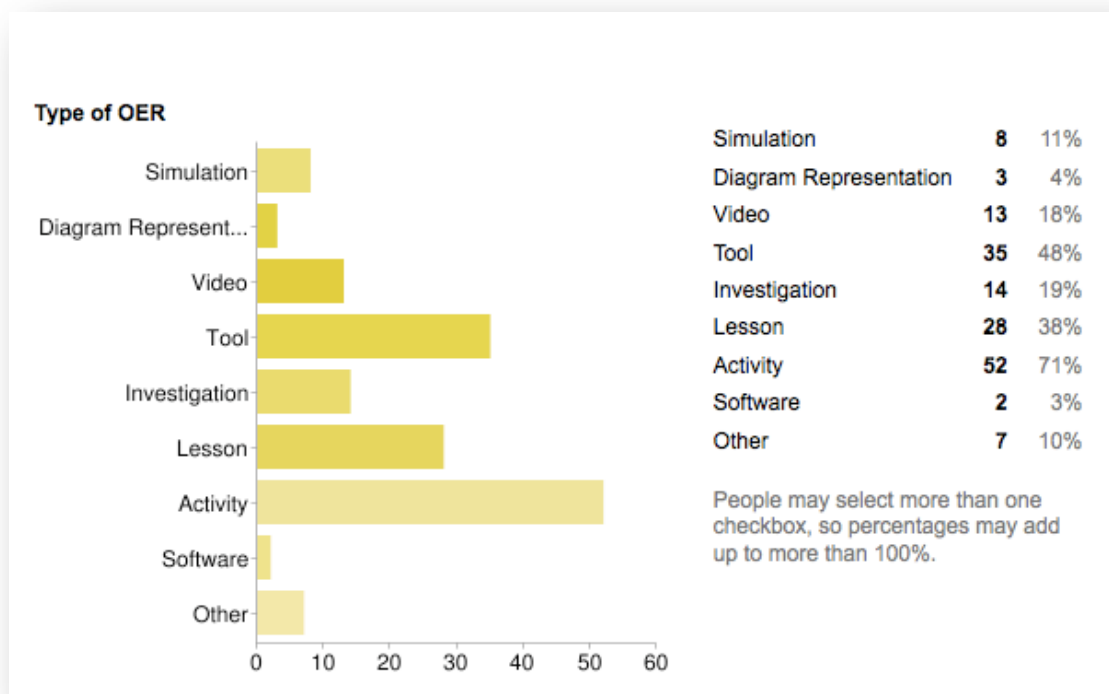
Standards

The ratings revealed which resources promoted vocabulary and grammar practice in writing, reading, speaking and listening activities. Table 8 shows that of the 83 sites that were rated, 63% fell under the *Communication* strand, which covers vocabulary and grammar practice. Practice in reading and listening comprised 52% of the sites, while speaking and writing were represented by 32% and 31% of the sites reviewed.

Table 8 Maine Learning Result strands represented in the study

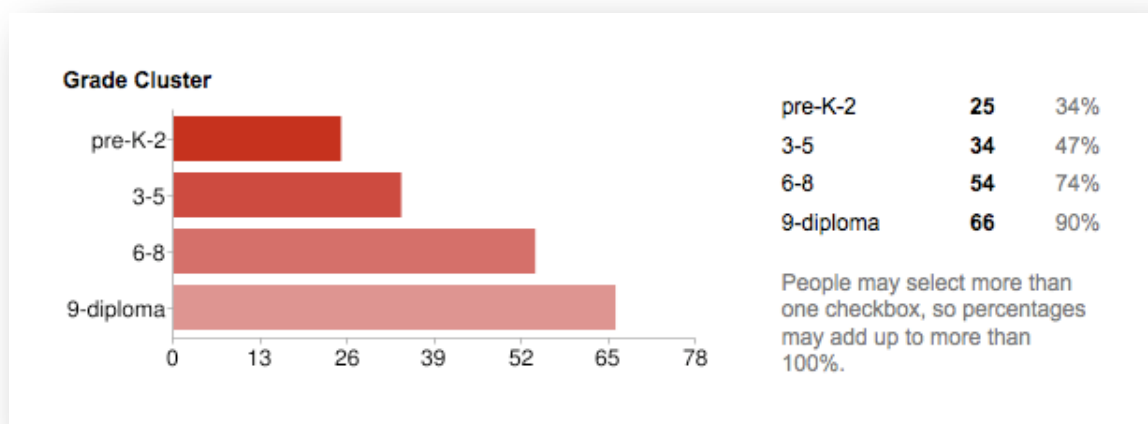
Type of OER

The second question addressed authentic language experiences including collaboration between teachers, learners, and native speakers. Table 9 shows the breakdown of the types of resources represented by the websites in the study. *Activity* comprised 71% of the sites, without going into specific details of the activity, it is inconclusive as to whether these activities are authentic or promote collaboration. 18% of the sites included *Video*, which does suggest an authentic language experience. 11% are *Simulations*. The data were inconclusive about collaboration. “Tools” may cover collaboration but it cannot be implied that a tool is collaborative.

Table 9 Types of OER represented in the study

Grade cluster

The results clearly showed a trend of identifying 9-12 grade appropriate sites. Table 10 shows 90% of the sites rated were geared towards high school students. 60% of the researchers were teaching high school at the time of the study.

Table 10 Grade clusters represented by the study

Discussion

A wicked problem

The literature was clear that open educational resources are not neat, tidy forces within education that magically appear and come with instructions for use. They are a “wicked problem” that has to be continually redefined with different outcomes depending on the variables, which Rittel and Webber define as changing requirements. This study verified that there is no clear or sure-fire path in doing open educational research in Maine. Each content area team conducted their studies a little differently in order to meet distinct curricular needs. The teacher leaders met often to discuss how the research was being conducted between teams. Each teacher leader chose different methods for communicating with their research teams and shared back with the leaders what was working and what was not. One

member of the research cohort described the process as “flying the plane while building it.”

For open educational resources to become part of the way Maine educators do business, one recommendation is that social networking be leveraged to communicate between content area teams, teachers, learners, and the state department of education. While this may feel informal and messy, it seems the most organic way to network. The research cohort in World Languages represented each of the Superintendent’s regions, of which there are nine in the state of Maine. The results of the study identified 58 open educational resources in their content area. The distance between researchers was removed as they learned to work together on-line. As more teachers understand how to connect in this manner, it will allow them to model this interaction with students, as well as educate and enlighten through identified sites. World Language students will benefit from to native speakers, collaboration, practice with vocabulary, grammar, speaking and listening. Networking with open educational resources, as a central framework and theme, will continue the dialog introduced in this research in a robust manner. As the South African study showed, quality control depends on the relationship and motivation of the teachers.

Training

Decentralizing the workspace and delineating the workflow make communicating about knowledge gaps an essential networking event. Skype™ and Google™ were the open educational resources used for the research. How does one

proceed when not everyone is at the same level of expertise and that is unavoidable?

The feedback from this research in narrative form showed similar frustration as the found in the literature in terms of understanding what to do and how to do it with technology. With many different platforms being used and rated, it at times was overwhelming for the researchers. As with learning a new language, the narratives revealed that more practice time with technology natives was needed.

The narrative feedback came out of the process of rating each website, as a required field in both the candidate rating form and peer review form. As each team began to use technology to interact with each other and rate the candidates, needs arose from individuals needing more training on specific applications. In research meetings, what ultimately happened is that the team worked together to identify gaps in proficiency and train each other in the process. Unlike the study done by Schuwer and Muler (2009), there was no lack of teacher buy-in. A recommendation that can be made for anyone wishing to replicate this is to remember that professional development, or training, must be built-in to the research. This study was grant funded and more funds are available to continue OER work, albeit through a different funding source.

Resources for identifying open education resources

Finding websites to review was not difficult based on the actual use of them in practical applications by researchers. The 58 identified sites represent a small study. Teachers on the team will continue to be rate potential candidates for use in

Phase 2. Why is this important? Just like the Dutch study that promoted teachers as “OER experts” (Shruwer and Mulder, 2009), teachers who understand how to rate and identify websites can market themselves to all kinds of Maine learners, not just those in their classrooms every day. This seems like a natural course of events for a state that has 65,000 laptops in public schools. A shift towards open, web-based, and on-line learning will benefit an already established learning network.

Important to this research study was that Maine teachers of a specific content area had to rate the candidates based on current learning standards (see Appendix K) and usability. This process must be repeated in order to maintain the quality controls. Each school has different curricular needs. These needs must be analyzed prior to rating websites and forms must be created accordingly.

When faced with the question of how to study open education and promote websites that qualify as open educational resources, the Maine study created a basic framework for rating sites. This result was on par with the literature, where the results of the studies in South Africa and the Netherlands both showed the development and educator use of frameworks to identify and create open educational resources. The sustainability of open education relies on the dialog that happens within efforts like these studies. Increased time to collaborate is the recommendation for anyone attempting to replicate this study and promote open education.

Copyright

Copyright was a central theme throughout the study. Who was allowed to use these sites and how? If Creative Commons was in place, it was an easy website to rate. If not, further investigation was required in most cases. Current research recommends that Creative Commons be applied to open educational resources. This is a departure from what is usually offered as extensions to paper textbooks, or online courses embedded within a university network. This leads to the questions about sites that are non-educational in nature and the shelf life of open educational resources. Each group found that they were unsure of copyright, with 33% of the reviews still unclear if copyright met the OER definition. This suggests that the use of Creative Commons in the sites studied was not prevalent and that websites are not coded for OER identification. Simply put, there is a lot of stuff out there that might be usable, but often the researcher has to clarify with the site creators if it is open and may be used freely.

There is no good way to circumvent copyright issues, as the informal nature of open education suggests that some websites will rate as open, even if they are not educational. The Internet contains so much information that is useful, and applicable to learning, that is not created with education in mind. The rating of these sites does create an alternate pathway to acquiring knowledge. One idea to help with the issue is to continually tag sites using social book marking tools that identify the site as rated as an open educational resource. In that way people can share sites that are rated as open.

Community and sustainability

How can open educational resources be identified and curated in such a way that educators can become a part of the process share meaningful content to students with laptops? Social networking, book marking or tagging, and collaboration all played roles in this study. These types of interactions in a digital environment require fluency from both teachers and learners. Professional development needs to be embedded into the process as an on-going skill building expectation. Overall the study revealed that *more* website reviews, *more* collaboration between teachers, and *more* discussion about what makes an OER valuable or usable should be considered.

From the potential candidate list, 58 out of the 83 websites were rated as open. Out of the four essential standards for the Maine Parameters for Essential Instruction, *Communication* was best represented, followed by *Culture*, and there were gaps in *Comparisons* and *Community*. These gaps merit further inquiry in those standards. The initial research questions were only partially answered by the study. More ratings of websites might adequately address those questions. The need for authentic language experiences with collaboration and exposure to native speakers seems very important to realize in areas where speakers of other languages are scarce and the resources for acquiring a second language are limited, which is the case in many schools in Maine. Further professional development funding can help move these ideas forward. Currently the World Language research cohort is considering the Hewlett Packard Achieve grant to pilot rubric development

for open courses at Khan Academy. In addition, the state department of education has contacted with Prasad Ram, former chief engineer at Google™, who is designing a content management system called Gooru and which the principle investigator is collaborating in the design of the World Language portion of the site.

For Maine teachers and learners, the potential impact of open educational resources is unclear at this time. Given the current climate of budget shortfalls, embracing the development of an open educational community that continually updates a master list of resources across the content areas would seem a wise investment. The fact that the hardware and connectivity is already in place puts Maine ahead of several of the sites of studies in the literature. What remains to be done is the formation is a robust, networked, funded community that can sustain the learning that occurs in the digital age.

Reference List

- Caswell, T., Henson, S., & Jensen, M. (2008). Open Education Resources: Enabling universal education. *International Review of Research in Open and Distance Learning*, 9, 1-10. Retrieved October 1, 2010 from ERIC educational database.
- Conole, G., & Weller, M. (2008). Using learning design as a framework for supporting the design and reuse of OER. *Journal of Interactive Media in Education*, 5, 1-13. Retrieved October 1, 2010 from EBSCOHost educational database.
- Fulantelli, G., Gentile, M., & Taibi, D. (2008). The Open Learning Object model to promote Open Educational Resources. *Journal of Interactive Media in Education*, 9, 1-11. Retrieved October 1, 2010 from ERIC educational database.
- Hylén, J. (2006). Open educational resources: Opportunities and challenges. *OECD-CERI*. Retrieved October 1 from <http://oecd.org/edu/oeri>.
- Hylén, J. (2007). [*Giving Knowledge for Free: The Emergence of Open Educational Resources*](#). Paris, France: OECD Publishing. Retrieved December 3 from <http://www.sourceoecd.org/education/9789264031746>.
- Koehler, M., & Mishra, P., (2008). Introducing TPACK. In AACTE Committee on Innovation and Technology (Eds.) *Handbook of Technological Pedagogical Content Knowledge (TPCK) for Educators*. New York: Routledge.

Lane, A.(2009) The impact of opened on bridging educational digital divides.

International Review of Research in Open and Distance Learning, 10, 1-12.

Retrieved October 1, 2010 from ERIC educational database.

Maine Learning Technology Initiative (2010). *About MLTI*, retrieved from

<http://maine.gov/mlti/about/index.shtml>

Petrides, L., & Jimes, C. (2008). Building Open Educational Resources from the ground up: South Africa's free high school science texts. *Journal of Interactive Media in Education, 7, 1-16.* Retrieved October 1, 2010 from ERIC educational database.

Schuwer, R., & Mulder, F. (2009). OpenER, a Dutch initiative in Open Educational Resources. *Open Learning, 24, 67-76.*

Tezci, E., Karaca, D., & Sezginsoy, B. (2008). The study of reliability and validity of creative materials. *The Turkish Online Journal of Educational Technology, 7 (1)* art. 5. Retrieved October 1, 2008 from ERIC educational database.

Thakrar, J., Zinn, D., & Wolfenden, F. (2009). Harnessing Open Educational Resources to the challenges of teacher education in Sub-Saharan Africa. *International Review of Research in Open and Distance Learning, 10, 1-15.* Retrieved October 1, 2010 from ERIC educational database.

Wilson, T. (2008). New ways of mediating learning: Investigating the implications of adopting open educational resources for tertiary education at an institution in the United Kingdom as compared to one in South Africa. *International*

Review of Research in Open and Distance Learning, 9, 1-19. Retrieved October 1, 2010 from ERIC educational database.

Appendices

Appendix A

<http://www.un.org/Overview/rights.html>

Appendix B

<http://creativecommons.org/about/licenses/>

Appendix C

<http://tinyurl.com/4n4zjck>

(potential candidates)

Appendix D

<http://tinyurl.com/389azyv>

(Candidate Review)

Appendix E

<http://tinyurl.com/2cmkl7w>

(Peer Review)

Appendix F

<http://tinyurl.com/6fmtn6v>

(summary of initial candidate review)

Appendix G

<http://tinyurl.com/35cvj4p>

(Master List)

Appendix H

<http://tinyurl.com/5s3vgvz>

(narrative report)

Appendix I

<http://www.delicious.com/syntiromsn/>

(OERs in Delicious™)

Appendix J

<http://www.Syntiro.org/oer/comments.php>

(researcher comments)

Appendix K

<http://www.state.me.us/education/lres/lres.htm>

(Maine learning results)